

MEDIUM-CLASS EXPLORER (MIDEX) ANNOUNCEMENT OF OPPORTUNITY

MIDEX EXPENDABLE LAUNCH VEHICLE OPPORTUNITIES

NASA seeks to take advantage of all reasonable sources of commercial expendable launch vehicle (ELV) services while assuring that NASA-funded primary, secondary or co-manifested payloads are not exposed to excessive risk. Accordingly, the launch vehicles that may be considered to launch MIDEX missions pursuant to this AO must be acquired and managed consistent with NASA Launch Services Qualification Requirements. These can be found in NPD 8610.XX, to be published. This document is not available at this time, however requests for copies can be made to the Explorer Project at the Goddard Space Flight Center. The available launch service options for MIDEX missions are described in section 4.1. This document provides performance, interface, and cost information for NASA-provided launch services under this AO.

NASA's fixed price launch services contracts include the provision of spacecraft-to-launch vehicle integration, analysis, and postflight mission data evaluation, in addition to placement of the spacecraft into the designated orbit. In addition to coordinating mission-specific integration activities, NASA provides spacecraft processing at the launch site and technical oversight of the launch service.

The SELVS II launch services acquisition is currently underway with contract award targeted for 1998. NASA seeks to award multiple contracts encompassing the range of performance shown in Figures D-1 and D-2. The SELVS II acquisition will be limited to qualified U.S. launch services suppliers. The SELVS II performance shown in Figures D-1 and D-2 reflects the baseline capability required under the procurement; actual capability acquired may be greater than noted.

The current Med-Lite Contract provides launch services on the Boeing Delta II 7320 ((two-stage vehicle with three strap-on Solid Rocket Motors (SRMs)), and the Delta II 7326, (three-stage vehicle with three SRMs and the Star 37FM third stage). Four strap-on SRM configurations, the Delta II 7420, 7426, and 7425 (with the Star 48 third stage), are also available under the Med-Lite Contract.

Proposals submitted under this AO will be evaluated against the vehicle capability as identified in Figures D-1 and D-2. Figures D-1 and D-2 illustrate the launch vehicle lift capability currently available for the various launch services noted above. The range of performance anticipated under the SELVS II contract(s) is also noted. Delta performance is shown for the two available fairings (9.5 and 10.0 foot diameter). Launch vehicle lift capability is shown for

circular orbits at 28.5 degrees inclination in figure D-1 and sun-synchronous inclination in Figure D-2.

The fairing envelopes available for the various vehicles are shown in Figures D-3 through D-7. Figures D-3 and D-4 show the 9.5 and 10.0 foot diameter fairings with a Delta two-stage configuration, and D-5 and D-6 show the 9.5 and 10.0 foot diameter fairings with a three-stage configuration. The envelope is the same with either the Star 48 or the Star 37FM configuration. Figure D-7 shows the minimum spacecraft static envelopes required by the SELVS II RFP.

Table D-1 gives an estimate of the funding required for each launch service, including annual phasing by fiscal year, which should be used for proposal purposes. Funding estimates assume a launch in April 2003 and are given in real-year dollars. The cost estimate for launches in years later than 2003 may be calculated by applying the proper inflation indices. The funding profiles provide for launch service, including appropriate upper stages, mission unique launch vehicle modifications, mission integration, launch site payload processing, and a factor for NASA oversight.

A Delta Payload Planner's Guide for the Delta II launch vehicle may be accessed by network at <http://www.boeing.com/>. User's guides for Med-Lite and Atlas launch vehicles will not be made available on the World Wide Web. Information regarding these vehicles, and additional information for Delta II, (including, but not limited to, performance quotes, reliability and mission integration inquiries) may be obtained from Mr. Hobie Swartwood, Orbital Launch Services Office, Code 470, NASA Goddard Space Flight Center (GSFC), phone 301-286-0431, Email: Hobie.Swartwood@gsfc.nasa.gov. Inquiries on associated launch costs and funding profiles should be directed to:

Ron Mueller
Expendable Launch Vehicles Office
Code M-7
NASA Headquarters
300 E St SW
Washington, DC 20546-0001

Phone: 202-358-4621
Email: rmueller@hq.nasa.gov

Figure D-1. Vehicle Capability for Circular Orbits, Inclination 28.5°

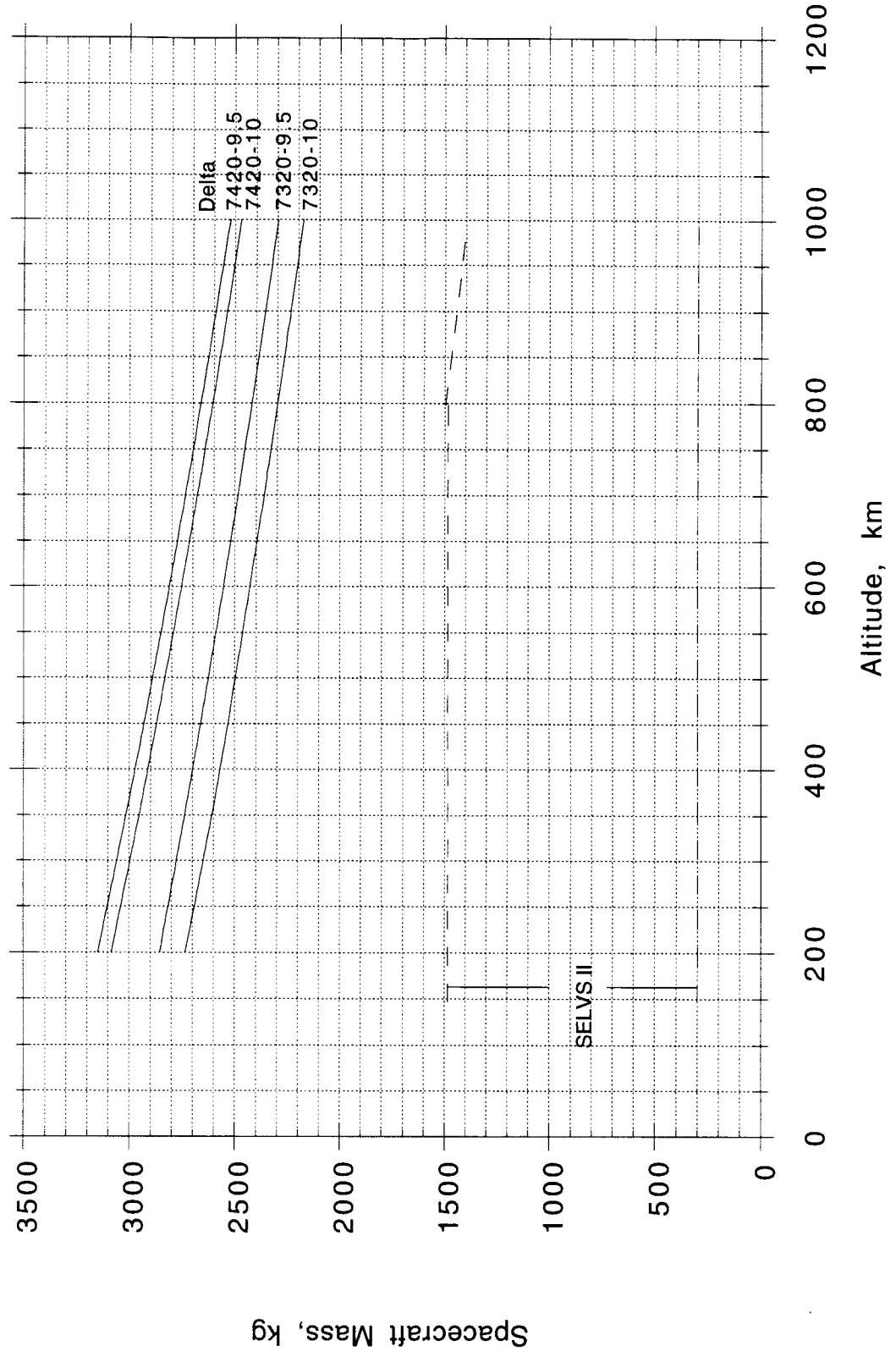
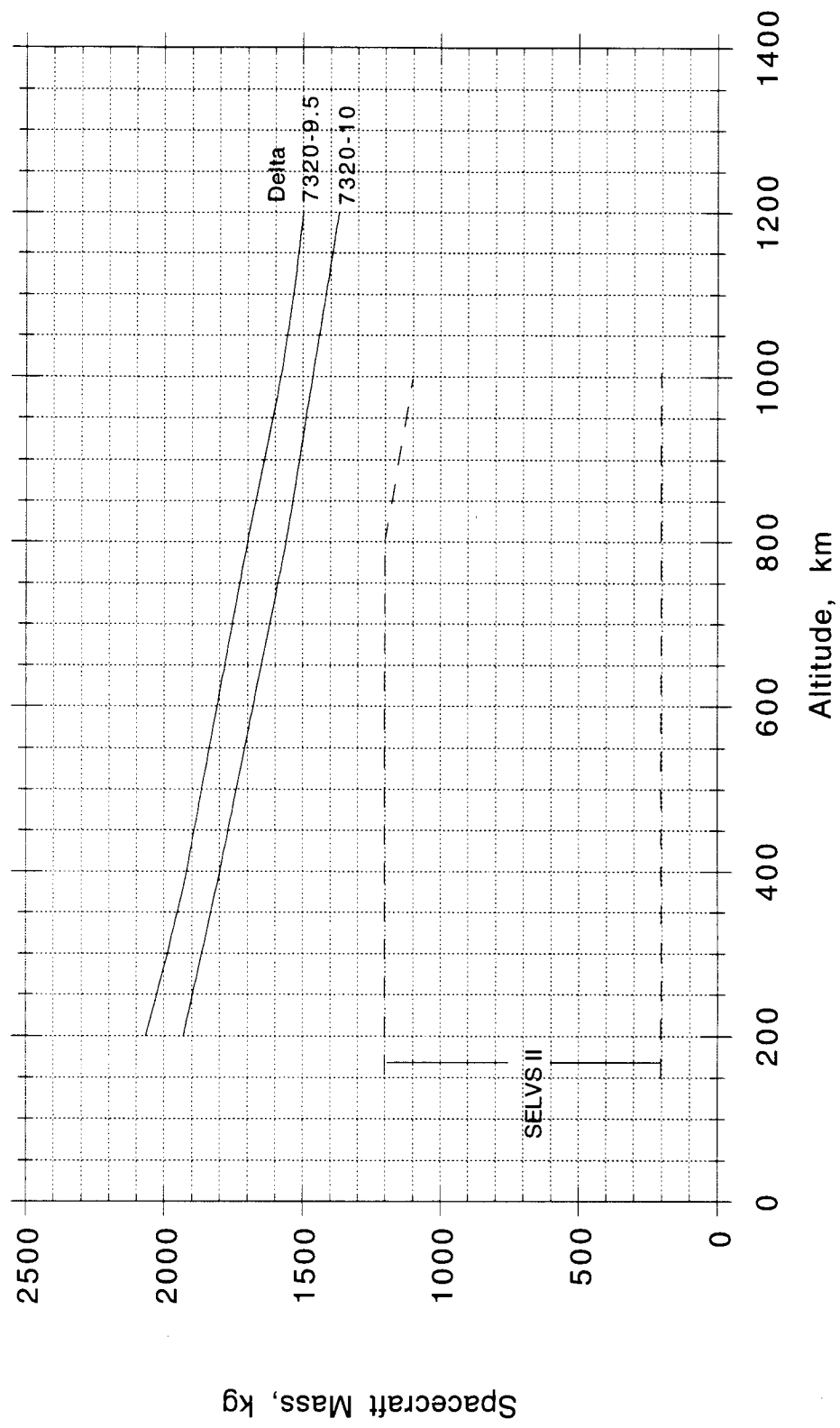





Figure D-2. Vehicle Capability for Circular Sun-Synchronous Orbits



-  Fairing Envelope
 Usable Payload Envelope
 Attach Fitting

Notes:

1. All dimensions are in $\frac{\text{mm}}{\text{in.}}$
2. All station numbers are in inches
3. Acoustic blanket thickness is 38.1 mm (1.5 in.) in nose, 76.2 mm (3.0 in.) on large cylinder, and 38.1 mm (1.5 in.) on small cylinder
4. OLS requires definition of spacecraft features within 50.8 mm (2.0 in) of payload envelope
5. Projections of spacecraft appendages below the spacecraft separation plane may be permitted but must be coordinated with the Delta Program Office

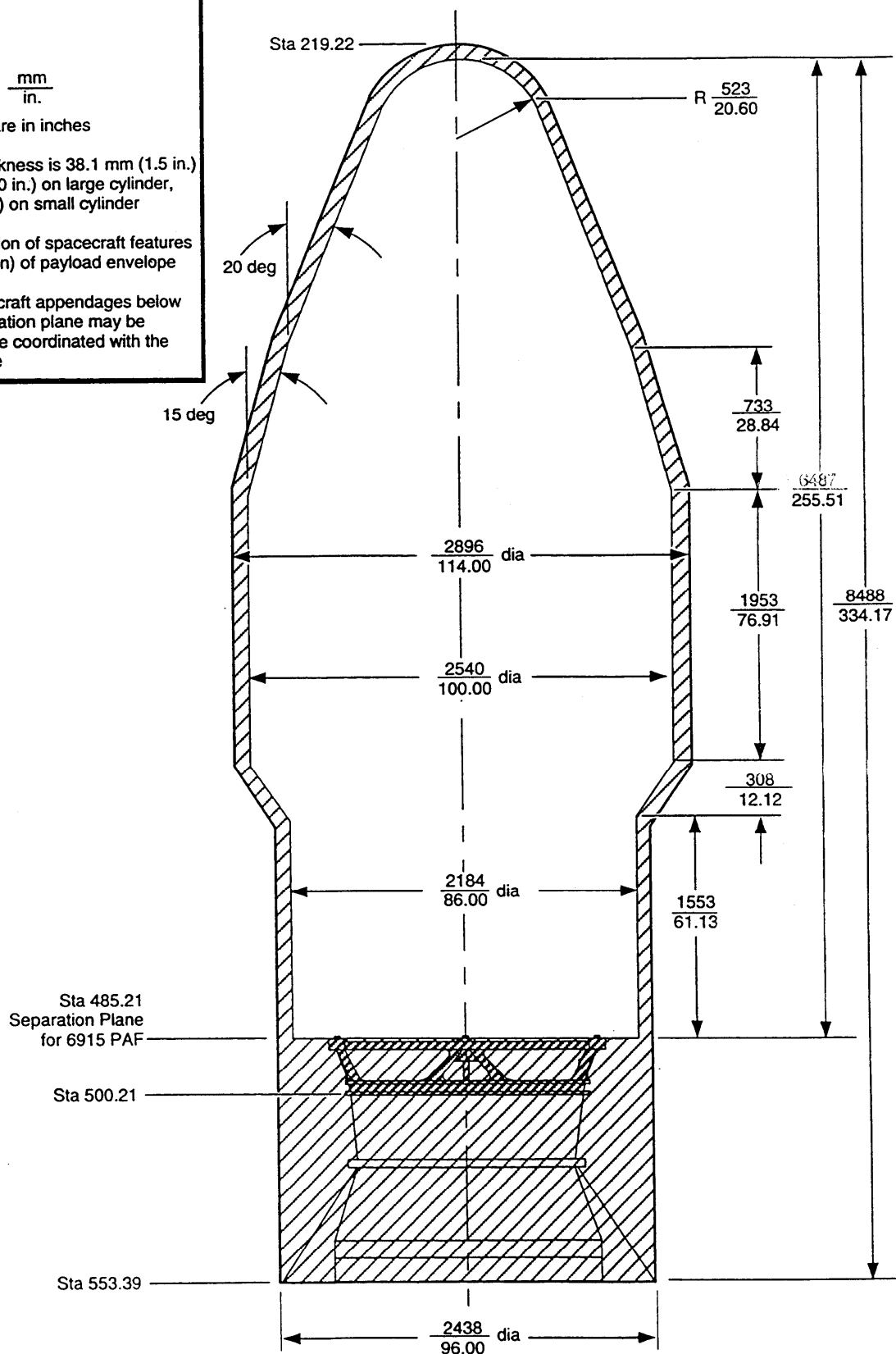


Figure D-3. Spacecraft Envelope, 2.9 m (9.5 ft) Diameter Fairing, Two-Stage Configuration (6915 PAF)

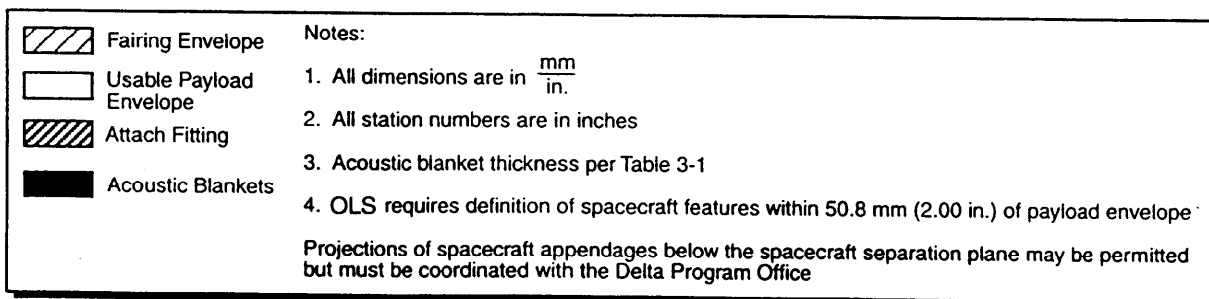
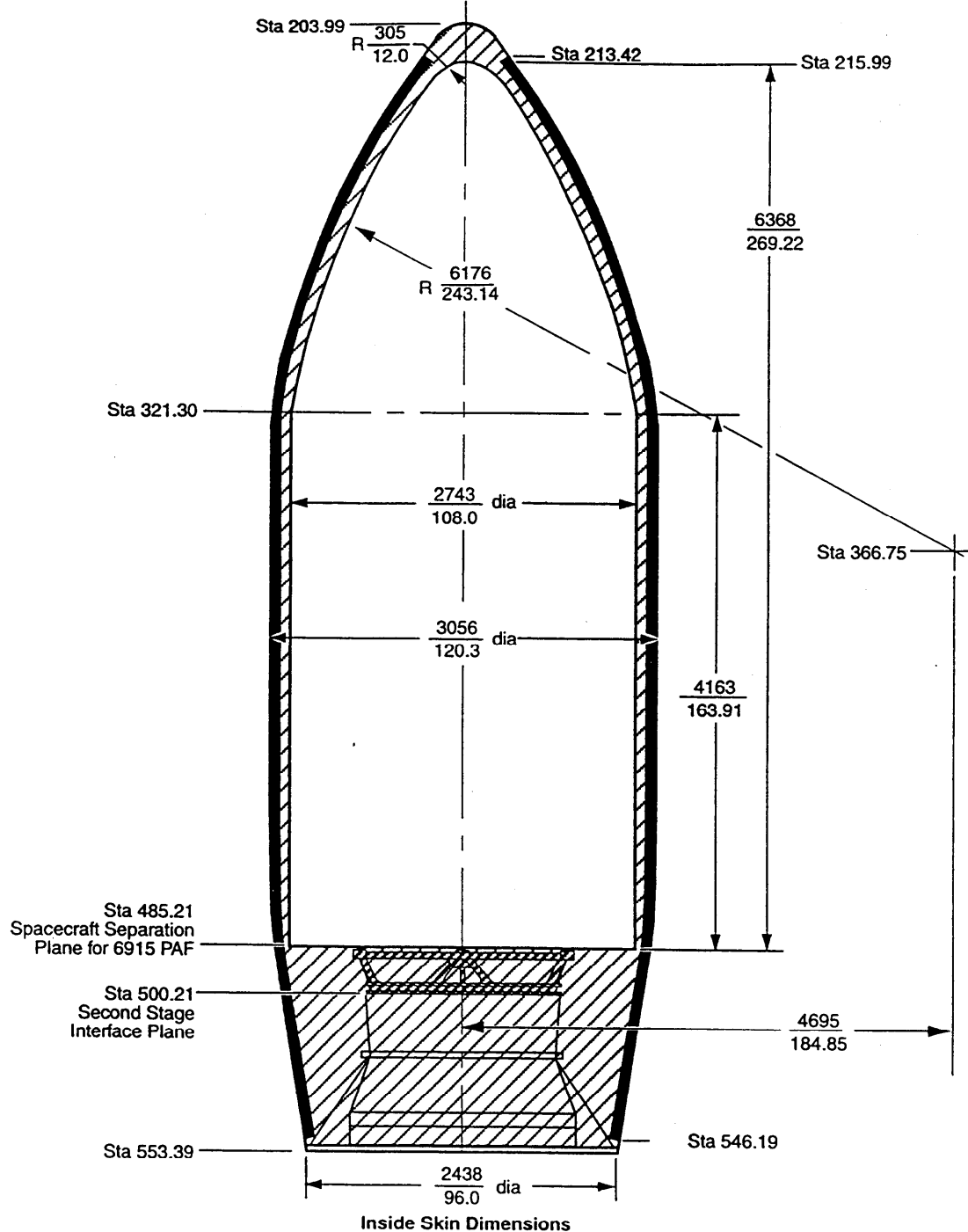
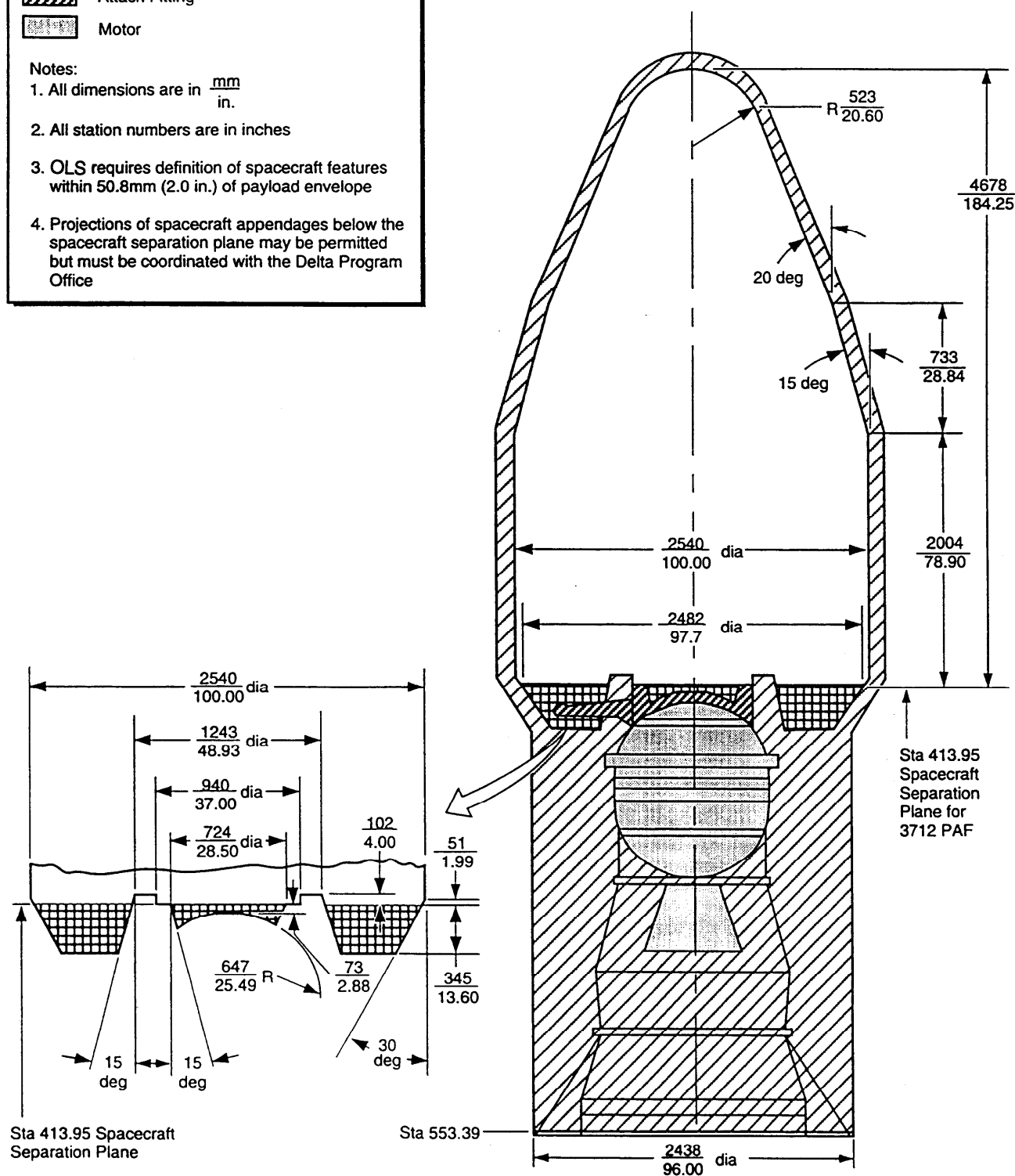


Figure D-4. Spacecraft Envelope, 3 m (10 ft) Diameter Fairing, Two-Stage Configuration (6915 PAF)



Stage Configuration (3712 PAF)

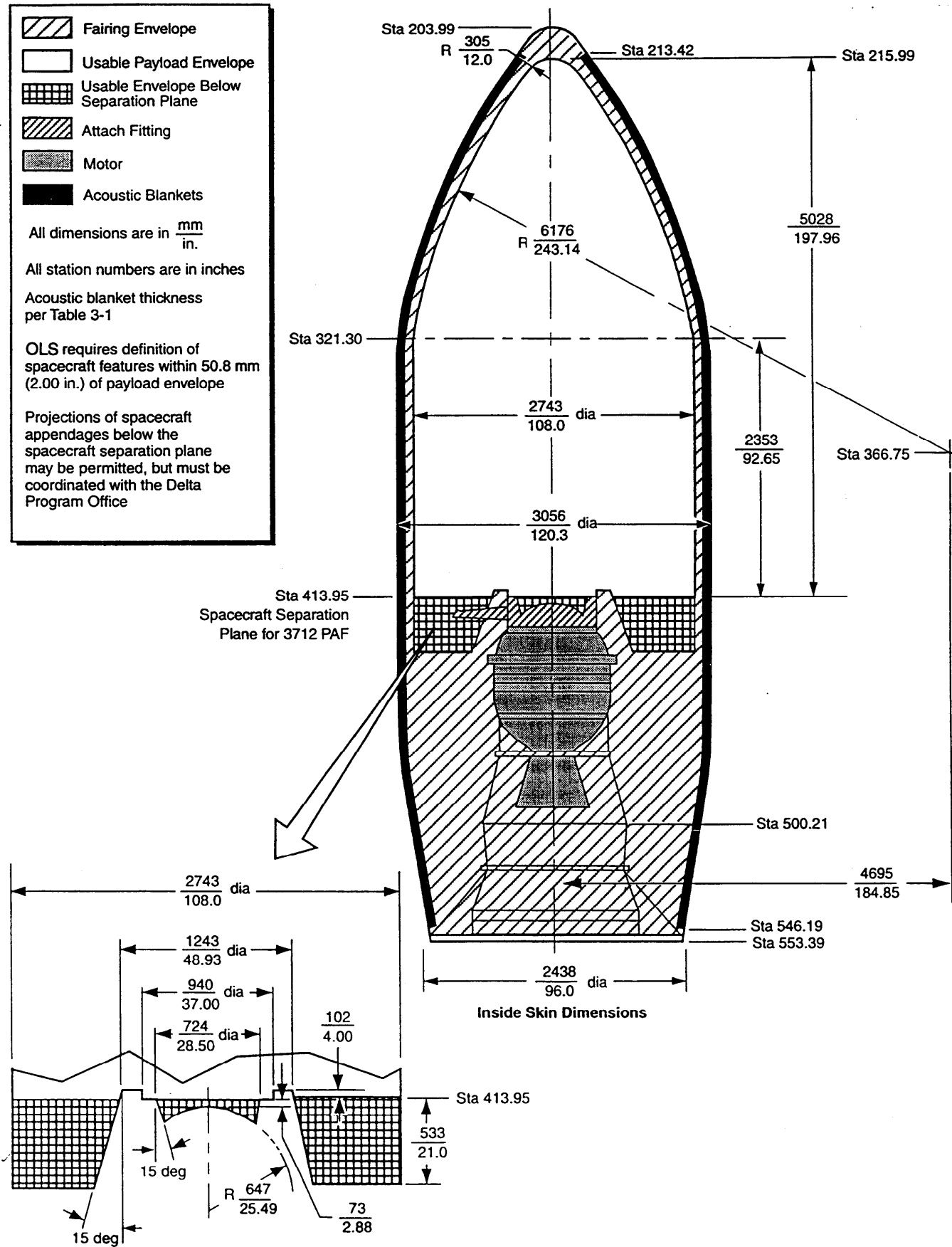
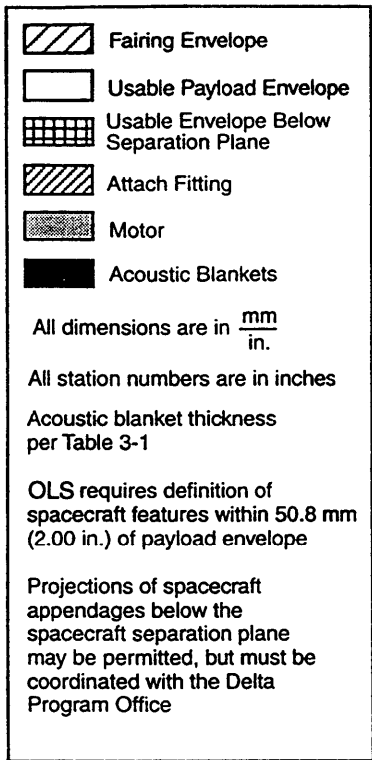
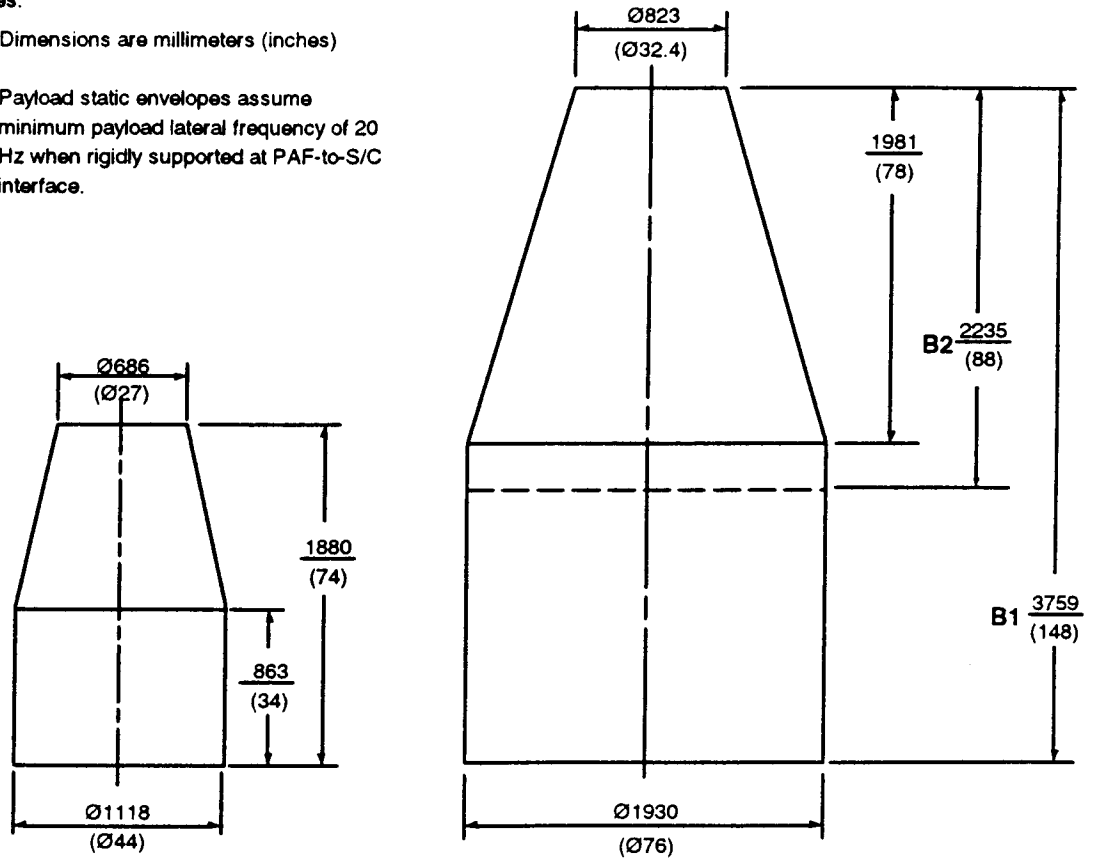


Figure D-6. Spacecraft Envelope, 3 m (10 ft) Diameter Fairing, Three-Stage Configuration (3712 PAF)

Notes:

- (1) Dimensions are millimeters (inches)
- (2) Payload static envelopes assume minimum payload lateral frequency of 20 Hz when rigidly supported at PAF-to-S/C interface.



Payload Static Envelope A

Payload Static Envelopes B1 & B2

Figure D-7. Minimum Spacecraft Envelopes Required by the SELVS II RFP

LAUNCH SERVICE	FY'01	FY'02	FY'03	FY'04	TOTAL COST
SELV II 'A'	7.0	11	8.0	2.0	28.0
SELV II 'B'	3.0	21.0	11.5	2.5	38.0
MED-LITE Delta 7320	8.5	17.0	16.5	5.0	47.0
MED-LITE Delta 7420	8.5	17.5	17.0	5.0	48.0
MED-LITE Delta 7326/7325	9.4	18.0	17.0	5.6	50.0

NOTE: Assumes an April 2003 launch, funding in real year dollars.

Note: Intermediate Delta III and Atlas Centaur launch services costs estimated in excess of \$100M for launch in 2003.

Table D-1: Launch Service Costs Summary (\$ in Millions)